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admirable character, and it was plainly in connection with the state of mind thus induced that the vision occurred. I am, therefore, not surprised that he should have modestly suggested that that I had 'over-done' the sketch, but I could not then, and can not now, admit the correctness of that suggestion. His visional call upon me to acknowledge the receipt of the articles I had sent him was in exact accord with what he would surely have done if we were yet living as neighbors. His commendation of those articles may perhaps be regarded by some persons as a reflection of my own egotism; but I prefer to regard it as a reflection of my foreknowledge of what his opinion would be when he read them, and of his manner of expressing it personally.

Nothing is more common than the appearance of absent and deceased friends in dreams, but noteworthy features of the one here recorded are its coherence, congruity and absence of every unpleasant feature except the disappointment occasioned by the sudden termination of the interview. In these respects it was equal to any that I have ever known or heard of, and even Coleridge's vision of Kubla Khan was not more remarkable in those features. But Coleridge was in ill health when he saw that vision; my health was normal. His sleep and vision were estimated by himself to have been three hours long; mine was so short as to cause me to suspect that it was almost momentary. His vision was wholly fanciful; mine was a counterpart of ordinary interviews which actually occurred long ago. The chief subject of his vision was, in a sense, accidental; the chief subject referred to by my shadowy visitor was precisely that which he would have introduced had he been living. In short, it is the matter-of-fact character of this vision, coupled with the distinctness and long continuance of impressions caused by friendly intercourse that gives to it peculiar interest.

Faithfully yours,

CHARLES A. WHITE.

SMITHSONIAN INSTITUTION,
October 2, 1902.

RECENT ZOOPALEONTOLOGY.

A REMARKABLE NEW MAMMAL FROM JAPAN. ITS
RELATIONSHIP TO THE CALIFORNIAN GENUS
DESMOSTYLUS, MARSH.*

IN a recent number of the *Journal of the College of Science*, Imperial University, Tokyo, S. Yoshiwara and J. Iwasaki give a full and well-illustrated description of a remarkable fossil skull discovered in 1898 in apparently marine beds of Miocene age, in the province of Mino. Photographs and sketches of this skull were sent to the writer of the present notice about a year ago, the authors at the time referring the animal to the Sirenia; it seemed to the writer to present more resemblances to the Proboscidea, and this view is adopted by the authors.

A study of this more complete account of the fossil, and comparison with a supposed fossil Sirenian described by Marsh from California in 1888, under the name *Desmostylus hesperus*, lead to the belief that the reference of this animal at present is somewhat uncertain; it is possibly Proboscidian, it is possibly Sirenian. The possible community of origin of these two orders of ungulates was, in fact, suggested by De Blainville, and has received some support from the recent discoveries of ancient types of Mastodon and Sirenians in Egypt. The authors fully recognize the Sirenian as well as Proboscidian resemblances in this animal, and rightly conclude that these may be primitive characters due to the remote common ancestry of these two orders of ungulates.

Whatever its affinities, this new fossil mammal is certainly most remarkable. The skull is about eighteen inches in length; the upper and lower jaws are greatly produced anteriorly, as in the Proboscidea and Sirenia, the premaxillæ bearing two forwardly directed tusks, while the lower jaw bears two pairs of tusks—a larger outer incisor and a smaller median incisor. These tusks point forward, and are completely invested with enamel. The enamel is also extremely thick upon the grind-

* 'Notes on a New Fossil Mammal,' by S. Yoshiwara and J. Iwasaki, *Jour. of the Coll. of Science*, Imperial Univ. of Tokyo, Vol. XVI, Art. 6, 1902.

ing teeth, which consist of two rows of vertical columns or cylinders, quite separate above but uniting below into one or two roots. "The crown," the authors observe, "is an aggregation of long, cylindrical, column-like tubercles, which are generally arranged in two longitudinal rows, parallel to the longer axis of the crown, and in three transverse rows at right angles to it. The enamel is extraordinarily thick, and the dentine, which occupies the center of the column, appears as a round section on the masticating surface." The authors conclude that the animal had four premolars and four molars [?] in the upper jaw, and four premolars and two or four molars in the lower; the number of teeth is rendered very uncertain, however, by the immature condition of this individual.

Marsh described the teeth of *Desmostylus* as consisting of nearly round columns loosely united, and more or less polygonal in cross section, thickly invested with enamel. He stated that the nearest affinities of this Sirenian are with the Tertiary *Metaxytherium* of Christol, and the living *Halicore*. The number of columns in a single tooth of *Desmostylus* is uncertain, but there are indications, according to Marsh, of at least twelve or fifteen. The *Metaxytherium* described by Christol (*Ann. d. Sc. Nat.*, 1841, Vol. XV., Series II., p. 333, Pl. VII.) was compared by him with *Hippopotamus medius* Cuvier ('Ossements Fossiles,' Ed. 1825, Vol. I., pp. 333, 334, Pl. VII.); its molars are brachyodont or short-crowned, resembling those of *Hippopotamus* and not at all similar to those of *Desmostylus*. Dr. Matthew recently examined the *Desmostylus* teeth, and agreed with Professor Beecher that they are probably Proboscidian, belonging to the anterior part of the jaw of a young mammoth; somewhat similar teeth have been figured by Leidy in his later studies of the Florida mammoths.

Just as this notice was going to press, Professor John C. Merriam, of the University of California, kindly sent the following very interesting note, entitled 'The Geographic Range of *Desmostylus* Marsh': "Excellent figures of the teeth accompanying the text show the unknown form to be practically

identical with the problematical *Desmostylus* of Marsh, which was described from several teeth and a few vertebræ obtained in California; the associated fauna is that of the Quaternary or the late Pliocene. Since the discovery of the type specimens, several teeth of *Desmostylus* have been found on this coast. The California State Mining Bureau has in its Museum a fine tooth from Canores Cañon, in the foothills of the west side of the lower end of the San Joaquin Valley. In the University of California Museum is a slightly worn tooth with a fragment of the jaw labeled San Jose. A third specimen, unfortunately of unknown origin, is in the Museum of the California Academy of Sciences. A fourth from Yaquina Bay, Oregon, is in the private collection of Professor Thomas Condon, at the University of Oregon. It is a matter for regret that we have not become acquainted with the exact occurrence of any of these specimens. Those from California appear to have come from fresh water beds of late Tertiary or Quaternary age. Regarding the tooth from Yaquina Bay, Professor Condon writes me: 'It was picked up on the Yaquina Beach which is throughout marine. * * * It was not the original finder who gave it to me so I missed the opportunity to learn whether it was loose on the surface or imbedded in the rock.'

"All of the teeth mentioned have the same structure as the type. In some of the American material there is practically a duplication of the form of specimens figured by Yoshiwara and Iwasaki. While a comparison of isolated teeth in forms so imperfectly known as these should hardly be considered as sufficient for indicating specific identity, there can be no doubt that the group represented by *Desmostylus hesperus* Marsh inhabited both the eastern and western shores of the Pacific. In all probability it will be shown to have had a much wider distribution than that now known."

The authors are certainly to be congratulated upon this discovery, which is one of the most important, if not the most important, paleontological discovery ever made in Japan.

EOCENE SIRENIANS IN EGYPT.

DR. C. W. ANDREWS published in July his third paper* on extinct vertebrates of Egypt, including a fuller description of a new species of Sirenian belonging to the genus *Eosiren*. The specialization of *Eosiren* is very notable. The author concludes: "It is remarkable that, except in the presence of posterior incisors and canines, this early (Middle Eocene) Sirenian is scarcely at all more generalized than the later *Halitherium*, and it appears that the Sirenian must have branched off from their parent stock at an extremely early period. In some respects, particularly in the structure of the teeth and of the humerus, there is a certain similarity with *Mærittherium*, and it seems not improbable, therefore, that the relationship between the Sirenian and the Proboscidea suggested by Blainville and others may have a real existence.

PROGRESS OF THE EXPLORATION FOR FOSSIL HORSES.

THIS is the second year of exploration by the American Museum of Natural History from the fund presented by William C. Whitney especially for researches on the evolution of the horse. Last year a number of Upper Miocene skulls and feet were found in Texas, but the chief discovery was the nearly complete skeleton of *Anchitherium*, the three-toed, marsh-living horse, which has just been mounted in the Museum. A nearly complete skeleton of *Mesohippus bairdi* was secured from a Western collector during the winter. The Montana expedition from the Museum during the present summer has fortunately secured a specimen of the little-known *Mesohippus westoni*, the horse of the Lower Oligocene, or Titanotheres beds proper, a species first named by Cope from the Swift Current Creek region of Canada. Word has just been received of the very fortunate discovery in Nebraska of the remains of a small herd of *Hipparion*. They consist of one skull, which promises to be fine, parts of others, eight hind limbs and feet, mostly complete, four fore

* 'Extinct Vertebrates from Egypt,' III., *Geological Magazine*, N. S., Decade IV., Vol. IX., pp. 291-295, July, 1902.

limbs and feet, one pelvis, and enough vertebrae and ribs to make up one complete vertebral column. Altogether there is no doubt that a complete animal can be mounted. The feet are of the very long, slender type, terminating in narrow, pointed phalanges.

THE PERISSODACTYLES TYPICALLY POLYPHYLETIC.

THE study of the fossil horses of this country, so far as it has progressed, proves conclusively that there were at least three and probably four parallel phyla, of which *Anchitherium*, *Protohippus* and *Hipparion* are the most conspicuous representatives in the Miocene, thus confirming results previously reached by Scott, Pavlow and others. This accords with the demonstration recently made by Osborn of four parallel phyla of Titanotheres, and of the long-known existence of two parallel phyla of Palæotheres. The theory that the Rhinoceroses included at least six parallel phyla is now finding fresh confirmation. The Lophiodons are certainly diphyletic, including the extremely light-limbed and the heavy-limbed forms. It thus appears that the Tapirs alone failed to conform to this law. This law is nevertheless a matter of comparatively recent recognition, the genealogy of the Horses, Rhinoceroses and Titanotheres having been widely treated as if they were monophyletic, ever since Huxley placed *Anchitherium*, *Hipparion* and *Equus* in a linear series.

H. F. OSBORN.

SCIENTIFIC NOTES AND NEWS.

DR. WOODROW WILSON was installed as president of Princeton University on October 25, in the presence of many distinguished educators and other prominent men. Addresses were made by ex-President Cleveland, by Dr. Francis L. Patton, the retiring president of the University, and by Dr. Wilson. We hope to publish the inaugural address of Dr. Wilson next week.

THE degree of LL.D. was conferred on Dr. Alexander Graham Bell at St. Andrew's University on October 23, on the occasion of the installation of Mr. Andrew Carnegie as rector.

At the centennial celebration of the founding of Washington and Jefferson College, held